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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/529,418

02/13/2006

Harumatsu Miura

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EXAMINER

MAI, NGOCLAN THI

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/529,418	<b>Applicant(s)</b> MIURA ET AL.	
	<b>Examiner</b> NGOCLAN T. MAI	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,6,7,11,12,14,17-19 and 51-67 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,6,7,11,12,17-19,51-53,56-58,60-62 and 64-66 is/are rejected.
- 7) ☒ Claim(s) 14, 54-55, 59, 63 and 67 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Status of Claims***

Claims 1, 6-7, 11-12, 14, 17-19, 51-67 are currently under examination, wherein claims 1, 6, 7, 11, 12, 14, 17, 18, 19 are amended in amendment filed 2/12/09 and claims 52-67 are newly added. Previous claims 2-5, 8-10, 13, 15-16, 20-50 had been cancelled.

### ***Status of Previous Objection/Rejection***

The previous objection to claims 11-12, 14, 17-19 under 35 CRF 1.75(c) as being improper form is withdrawn in light applicant amendment.

Previous rejection to claims 1, 6 and 7 under 35 U.S.C. 112, second paragraph is also withdrawn in light of applicant amendment.

Due to applicant amendment rejection of claims 1, 6, and 7 under 35 U.S.C. 103(a) as being unpatentable over Miura in view of Flinn et al is withdrawn. A new ground of rejection is follow.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 11 and 51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase "such as" in claim 11, line 8 and claim 51, line 7 renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1, 7, 17-18, 51, 56-57, and 60-61 are rejected under 35 U.S.C. 102(b) as being anticipated by Miura et al. "Composition Dependence of Microstructure of Mechanically Alloyed Powders and Their Compacts of High Nitrogen Cr-Mn Steels."**

Concerning claim 1, Miura et al disclose a high nitrogen containing austenite steel bulk material having improved mechanical strength and chemical properties and formed by mechanically alloying of elemental powder mixtures with an iron-nitride alloy powder as the nitrogen source. See abstract. The material is a nanostructure powder product comprising an aggregate of individual particles composed of grains of several tens of nanometers, i.e., nanocrystal grains (Page 909, column 2). Miura et al disclose during manufacturing iron nitride powder is mechanically alloyed with elemental metals and that 0.89% mass of nitrogen is retained in the hot compacted samples. See col. page 907, last paragraph of column 1 and page 909, column 2. The retained nitrogen reads on the claimed nitrogen in solid-solution. The claimed metal oxide or semi-metal oxide formed on the surface of the MA would have been inherently possessed by the material of cited reference because the instant claimed mechanically alloying using a ball mill step and composition are overlapped by the cited reference. Therefore, the burden is on the applicant to prove that the product of the prior art does not necessarily or inherently possesses characteristics attributed to the claimed product. In re Spade, 911 F.2d 705,

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708, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990), In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977) and also see MPEP § 2112.01.

Concerning claim 7, Miura et al disclose nucleation of some ferrite phase in the matrix. Se page 909, column 2, second paragraph.

Concerning claims 11 and 51, the bulk material taught by Miura contains Cr and Mn disclosed by the claims. See abstract. These materials inherently prevent denitrification during sintering process.

Concerning claims 17-18, 56, 57, 60, and 61, Miura et al disclose the bulk material has a crystal grain diameter of 300-500 nm. See page 909, 2<sup>nd</sup> column.

**Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. in view of Flinn et al (U.S. Patent No. 5,908,486).**

Miura et al disclose the crystal austenite steel bulk material substantially as claimed. Miura et al differ from the claim in that Miura et al do not teach metal oxide or semimetal oxide exists as crystal grain growth inhibitor.

Flinn et al disclose an austenitic stainless steel strengthened by combination of (a) intragranular precipitation of carbide and nitride nucleated on the nanometer-size hollow oxide resident within the alloy grains, (b) nitrogen solid solution strengthening, and (c) grain boundary pinning by solid oxides comprising aluminum oxides, precipitated along the grain boundaries. See col. 2, lines 15-37, col. 7, line 58 to col. 8, line 5 and claim 13. Flinn et al also teach the solid oxide dispersions are believed to be responsible for pinning the grain boundaries and hence restricting grain growth. See col. 8, lines 43-48. It would have been obvious to one of ordinary

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skill in the art at the time the invention was made to modify the high nitrogen containing austenite steel bulk material of Miura et al by further including metal oxide as taught by Flinn et al in order to control the grain size of the austenite steel bulk material of Miura thereby providing bulk material having enhanced strength.

**Claims 12, 52, 53, 58, 62, and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. in view of Flinn or Rhodes (U.S. Patent No. 5,841,046, cited in previous action).**

Miura discloses the claimed crystal austenite steel bulk material substantially as claimed. The composition disclosed for making austenitic steel comprises 18% Cr, 5-18% Mn, 0.45 to 0.9% N and the balance Fe. See page 907, 2<sup>nd</sup> column.

Concerning claims 12 and 52-53 Miura differs from the claims in that Miura does not teach the austenite steel bulk material has a steel forming and blending composition also comprising by mass 0.02 to 1.0% C. However is well known in the art that carbon concentration level in austenitic steel is as low as 0.01 to as high as 0.08 % by mass. See Flinn, abstract and Rhodes, column 2, lines 61-63. In view of this fact it would have been obvious to include carbon in the elemental powder mixture of Miura and to combine known ingredient having known functions, to provide a composition having the additive effect of each of the known functions is within realm of performance of ordinary skill artisan. In re Castner, 186 USPQ 2 13 (217).

Concerning claims 58 and 62, Miura et al disclose the bulk material has a crystal grain diameter of 300-500 nm. See page 909, 2<sup>nd</sup> column.

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Concerning claim 66, Miura et al do not specifically teach bulk material having crystal grain diameter of 100 to 300 nm (page 909, 2nd column). However Miura disclose the size range 300-500 nm which overlaps the range (i.e., 300 nm) as claimed by the applicant establishing a prima facie case of obviousness in regard to this limitation.

**Claims 19, 64, and 65, rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al.**

Miura et al differ from the claims in that Miura does not specifically teach bulk material having crystal grain diameter of 100 to 300 nm (page 909, 2nd column). However Miura disclose the size range 300-500 nm which overlaps the range (i.e., 300 nm) as claimed by the applicant establishing a prima facie case of obviousness in regard to this limitation.

### ***Response to Arguments***

Applicant's arguments filed February 12, 2009 have been fully considered but they are not persuasive. Applicant essentially argues that claims are patentable because the claimed invention is characterized in that said combination of nitrogen and carbon contained in austenite steel materials, which have not been manufactured by known techniques, also in their nitrogen concentration levels is as high as 0.50 mass % or more as mentioned above.

In response to applicant's argument that the references fail to show certain features of applicant's invention as in claims 1, 6 and 7, it is noted that the features upon which applicant relies (i.e., combination of nitrogen and carbon) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification

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are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The claims are remained rejected for the reasons given above.

Claims 14, 54- 55, 59, 63 and 67 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NGOCLAN T. MAI whose telephone number is (571)272-1246. The examiner can normally be reached on 8:30-5:00 PM Monday-Friday.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/  
Supervisory Patent Examiner, Art Unit  
1793

n.m.